

### **REMARKS/ARGUMENTS**

Claims 1-12 and 29-32 are pending in this application. Claim 3 has been allowed. Claims 1, 2, 9 and 12 have been amended. Claims 13-28 have been cancelled. New claims 29-32 have been added. In view of the examiner's earlier restriction requirement, applicant retains the right to present claims 13-28 in a divisional application.

**Claims 1, 2 & 4-12 are rejected under 35 USC 103(a) as being unpatentable over US Publication 2003/0165732 A1 (McElroy) and evidenced by Fuel Cell Systems.**

Claim 1 is an independent claim. Claim 1 has been amended to add that the electrolyte sheet includes thicker and thinner areas and the thickness of the electrolyte sheet changes progressively closer to the edges. Neither one of the cited references discloses this feature. This feature is shown, for example, on Fig 17B of the Applicant's specification. Claim 1 also specifies that the electrolyte sheet is flexible. (This feature was originally called for in claim 12.) This feature is also not disclosed by either one of the two cited references. Claim 1 is now similar, but somewhat broader than the already allowed claim 3 which states that said electrolyte sheet includes thicker and thinner areas and the thinner areas become progressively thinner closer to the edges.

Claims 4-12 and the new claims 29-32 depend from claim 1 as their base claim and, therefore, expressly incorporate the subject matter of claim 1. Accordingly, claims 1, 4-12 and 29-32 should now be allowable. Furthermore, claim 29 specifies that the electrolyte sheet has ohmic resistance less than 0.2 ohms/cm<sup>2</sup> (see Paragraph [0045] for support), while claim 31 specifies that the thinner areas of the electrolyte sheet are textured. This is shown, for example, in Figs. 4A and 4B and is not disclosed by the cited references.

Claim 2 is an independent claim. Claim 2 has been amended to state that the ceramic electrolyte sheet is flexible, has a substantially homogeneously non-porous body of a varied thickness with an average thickness of 3  $\mu$ m to 30  $\mu$ m, is bendable to an effective radius of curvature of less than 20 cm. The two cited references, neither together, nor in combination,

disclose these features. This claim is supported, for example, by pg. 8 paragraph [0046] and also by paragraph [0051] of the Applicant's specification.

Claim 9 depends on claim 1 and in addition states that the electrolyte sheet has an average electrolyte sheet thickness between 3 micrometers and 30 micrometers, and that at least 50% of the area of the electrolyte sheet situated under said at least one cathode and said at least anode has a thinner body than the rest of the electrolyte sheet situated under said at least one cathode and said at least anode. (See, for example, the last two lines of paragraph [0048] the Applicant's specification). Claim 30 depends from claim 9 and further states that there are multiple thinner electrolyte sheet areas under said at least one cathode and said at least anode. Claim 32 depends from claim 9 and further states that at least 75% of the area of the electrolyte sheet situated under said at least one cathode and said at least anode has a thinner body than the rest of the electrolyte sheet situated under said at least one cathode and said at least anode. This is also supported by paragraph [0048] of the Applicant's specification.

**Claims 1, 2 & 4-12 are rejected under 35 USC 103(a) as being unpatentable over US Publication 2003/0165732 A1 (McElroy) in view of US Publication 2002/0012825 (Sasahara) and evidenced by Fuel Cell Systems.**

As stated above, claim 1 has been amended to include the following language: "wherein said electrolyte sheet includes thicker and thinner areas and the thickness of the electrolyte sheet changes progressively closer to the edges." Claims 4-12 depend from claim 1 as their base claim and thus expressly incorporate this language. This feature is not shown in either US Publication 2003/0165732 A1 (McElroy), US Publication 2002/0012825 (Sasahara), or the Fuel Cell Systems reference. Therefore, because the cited references, in combination, do not disclose this feature, claims 1 and 4-12 are not obvious over these references.

Claim 2 now states that the ceramic electrolyte sheet is flexible, has a substantially homogeneously non-porous body of a varied thickness with an average thickness of 3  $\mu$ m to 30  $\mu$ m, is bendable to an effective radius of curvature of less than 20 cm. The three cited references, neither together, nor in combination, disclose these features.

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Therefore, claim 2 is patentable over US Publication 2003/0165732 A1 (McElroy) in view of US Publication 2002/0012825 (Sasahara) and evidenced by Fuel Cell Systems.

**Claims 8, 9 & 11 are rejected under 35 USC 103(a) as being unpatentable over US Publication 2003/0165732 A1 (McElroy) in view of US Publication 2001/0044043 (Badding) and evidenced by Fuel Cell Systems.**

Claims 8, 9 and 11 depend from claim 1 as their bas claim and, therefore include the following language: “wherein said electrolyte sheet includes thicker and thinner areas and the thickness of the electrolyte sheet changes progressively closer to the edges”. The three cited references (Publication 2003/0165732 A1 (McElroy), US Publication 2001/0044043 (Badding,) and Fuel Cell Systems), neither together, nor in combination, disclose this features. Therefore, claims 8, 9 and 11 are now patentable over these references.

Furthermore, Claim 9 states that the electrolyte sheet has that at least 50% of the area of the electrolyte sheet situated under said at least one cathode and said at least anode has a thinner body than the rest of the electrolyte sheet situated under said at least one cathode and said at least anode. The three cited references (Publication 2003/0165732 A1 (McElroy), US Publication 2001/0044043 (Badding,) and Fuel Cell Systems, neither together, nor in combination, disclose this feature. Therefore, claim 9 is patentable over the cited references.

It is also noted that the Badding reference expressly discloses an electrolyte that is not homogeneously non-porous (see Fig 2, of Badding), while in the present application Applicants claimed “substantially homogeneously non-porous body of a varied thickness”. This Figure 2 shows that both layers 2 (roughened layers) of the electrolyte sheet are porous while the uniform thickness layer 4 is non-porous.

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**Claims 1, 2 and 4-12 are rejected under 35 USC 103(a) as being unpatentable over US Publication 2003/0165732 (McElroy) in view of JP Publication 05-258756 (Kato) and evidenced by Fuel Cell Systems.**

As stated above, claim 1 has been amended to include the following language: "wherein said electrolyte sheet includes thicker and thinner areas and the thickness of the electrolyte sheet changes progressively closer to the edges." Claims 4-12 depend from claim 1 as their base claim and thus expressly incorporate this language. This feature is not shown in either US Publication 2003/0165732 A1 (McElroy), JP Publication 05-258756 (Kato), or the Fuel Cell Systems reference. Therefore, because the cited references, in combination, do not disclose this feature, claims 1 and 4-12 are not obvious over these references.

Claim 2 now states that the ceramic electrolyte sheet is flexible, has a substantially homogeneously non-porous body of a varied thickness with an average thickness of 3  $\mu$ m to 30 $\mu$ m, is bendable to an effective radius of curvature of less than 20 cm. The three cited references (US Publication 2003/0165732 A1 (McElroy), JP Publication 05-258756 (Kato), or the Fuel Cell Systems reference), neither together, nor in combination, disclose these features. Therefore, claim 2 is not obvious over these references.

#### **New Claims**

Claims 29-32 are new. They depend from claim 1 as their base claim, and, as described above, introduce no new subject matter into the application.

#### **Conclusion**

Based upon the above amendments, remarks, and papers of records, applicant believes the pending claims of the above-captioned application are in allowable form and patentable over the prior art of record. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

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Applicant believes that no extension of time is necessary to make this Reply timely. Should applicant be in error, applicant respectfully requests that the Office grant such time extension pursuant to 37 C.F.R. § 1.136(a) as necessary to make this Reply timely, and hereby authorizes the Office to charge any necessary fee or surcharge with respect to said time extension to the deposit account of the undersigned firm of attorneys, Deposit Account 03-3325.

Please direct any questions or comments to Svetlana Z. Short at 607-974-0412.

Respectfully submitted,

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